IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) Radiation detector apparatus ~~(10)~~ with an array ~~(12)~~ of detector pixels, wherein each pixel ~~(20)~~ comprises: a) a conversion element ~~(26)~~ for the conversion of incident radiation ~~(v)~~ into free charges; b) a charge storage element for the storage of said free charges, comprising a charge storage region ~~(25)~~ and a photogate electrode ~~(21)~~ being disposed on and electrically isolated from the charge storage region ~~(25)~~ for inducing an electrical field in it; c) a photogate line ~~(32)~~ that connects the photogate electrode ~~(21)~~ to an external driver circuit ~~(14)~~; d) readout elements ~~(23, 24)~~ for the selective conversion of the charges stored in the charge storage element ~~(21~~, into an electrical signal on an output line ~~(31)~~ of the pixel; and wherein at least one of the photogate lines ~~(32)~~ is connected to the corresponding external driver circuit ~~(14)~~ via a current sensor ~~(40)~~ for detecting displacement currents that are caused by changes in the charge of a charge storage element ~~(21, 25)~~ coupled to that line.

2. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 1, ~~characterized in that~~wherein at least one group ~~(22)~~ of neighbouring pixels ~~(20)~~ is coupled to the same photogate line ~~(32)~~ and current sensor ~~(40)~~.

3. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 1, ~~characterized in that~~wherein the external driver circuit ~~(14)~~ is capable of applying a constant voltage to the photogate electrodes ~~(21)~~ coupled to it.

4. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 1, ~~characterized in that~~wherein the current sensor ~~(40)~~ comprises a charge-sensitive amplifier.

5. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 1, ~~characterized in that~~wherein the charge storage region ~~(25)~~ is made of a semiconductor, preferably of crystalline silicon.

6. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 1, ~~characterized in that~~wherein the conversion element ~~(26)~~ is sensitive to visible light and/or X-radiation.

7. (currently amended) Radiation detector apparatus ~~(10)~~ according to claim 6, ~~characterized in that~~ wherein each pixel ~~(20)~~ comprises a scintillation layer ~~(28)~~ for converting incident X-rays (X) into optical photons ~~(v)~~.

8. (original) An X-ray examination apparatus comprising: an X-ray source for exposing an object to be examined to X-ray energy; and an X-ray detector apparatus as claimed in claim 1, for receiving an X-ray image after attenuation by the object to be examined.

9. (currently amended) A method for controlling an X-ray examination apparatus according to claim 8, comprising:--exposing the object to be examined to X-radiation; monitoring output signals of the current sensors ~~(40)~~ during the X-ray exposure; halting the X-ray exposure in response to the signal monitoring; and reading out the charges stored in the charge storage elements ~~(21, 25)~~ to obtain an X-ray image.

10. (currently amended) A method for monitoring the dose collected by at least one pixel ~~(20)~~ of a radiation detector apparatus ~~(10)~~, the pixel comprising: a) a conversion element ~~(26)~~ for the conversion of incident radiation ~~(v)~~ into free charges; b) a charge storage element ~~(21, 25)~~ for the storage of said free charges, comprising a charge storage region ~~(25)~~ and a photogate electrode ~~(21)~~ being disposed on and electrically isolated from the charge storage region ~~(25)~~ for inducing an electrical field in it; c) a photogate line ~~(32)~~ that connects the photogate electrode ~~(21)~~ to an external driver circuit ~~(14)~~; d) readout elements ~~(23, 24)~~ for the selective conversion of the charges stored in the charge storage element ~~(21, 25)~~ into an electrical signal on an output line ~~(31)~~ of the pixel; wherein displacement currents are sensed in at least one photogate line ~~(32)~~, the displacement currents being induced by changes in the charging of charge storage elements ~~(21, 25)~~ connected to said line.